Independent Scientific Advisory Board
Fiscal Year 2018 Statement of Work

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Partnership

In 1996, the Northwest Power and Conservation Council and NOAA Fisheries established the Independent Scientific Advisory Board (ISAB). The ISAB was formed to provide independent scientific advice and recommendations regarding scientific issues posed by the respective agencies on matters that relate to their fish and wildlife programs. In 2002, the Columbia River Basin Indian Tribes were added as equal partners in the administrative oversight of the ISAB.

Purpose

The ISAB fosters a scientific approach to fish and wildlife recovery and the use of sound scientific methods in research related to the programs of NOAA Fisheries, the Council, and the Tribes. It is understood that the interests of NOAA Fisheries relate particularly to anadromous fish conservation and management, while those of the Council and the Tribes include all fish and wildlife populations affected by operation and development of the Columbia River Basin hydroelectric system. NOAA Fisheries is responsible for federal stewardship of the Nation’s marine and anadromous fish, and marine mammals. The Council is charged to “protect, mitigate, and enhance” fish (anadromous and resident) and wildlife as affected by operation and development of the hydroelectric system. The Tribes manage fish and wildlife resources on their respective reservations, are co-managers on ceded lands, and are responsible to ensure treaty provisions governing natural resources are secured to future generations.

The ISAB is a standing body with general tasks, specified in a Terms of Reference, that guide its work plan. Specific ISAB assignments are commonly generated within the fiscal year, often span fiscal years, and are sometimes unanticipated. The ISAB’s general tasks are described below, followed by proposed and potential assignments for Fiscal Year (FY) 2018. The ISAB’s total FY 2018 budget to complete these and other potential reviews approved by the ISAB Administrative Oversight Panel is $550,000.

On August 17, 2017, this Statement of Work was approved by the ISAB Administrative Oversight Panel, consisting of Henry Lorenzen, Council Chair; Kevin Werner, Science and Research Director, NOAA’s Northwest Fisheries Science Center; and Jaime Pinkham, Executive Director, Columbia Inter-Tribal Fish Commission. This Statement of Work was approved with the understanding that it is a working document and potential assignments may be added by the ISAB Administrative Oversight Panel based on discussions with the entities they represent. The potential assignments described in this document and any new assignment proposed during the year are subject to ISAB Administrative Oversight Panel revision and approval.
General ISAB Responsibilities

The ISAB addresses scientific and technical issues relating to the Council’s Fish and Wildlife Program, tribal fish and wildlife programs, and the NOAA Fisheries Recovery Program for Columbia River Basin salmonids. Principal activities include, but are not limited to, the following:

- Evaluate the Council’s Fish and Wildlife Program on its scientific merits in time to inform amendments to the Fish and Wildlife Program and before the Council requests recommendations from the region.

- Provide scientific review of NOAA Fisheries recovery planning activities for Columbia River Basin stocks when requested.

- Review the scientific and technical issues associated with efforts to improve anadromous fish survival through all life stages, based on adaptive management approaches.

- Review and provide advice on priorities for conservation and recovery efforts, including research, monitoring, evaluation, and data management.

- Provide scientific reviews of topics identified as critical to fish recovery and conservation in the Columbia River Basin.

- Provide scientific review of, and suggestions to strengthen, tribal efforts to restore fish and wildlife resources when requested.

- Compare the various plans, strategies, analytical tools, and methods employed by the Council, NOAA Fisheries, the Columbia River Basin Indian Tribes, and others related to the management of Columbia River Basin fish and wildlife to identify areas of consensus, disagreement, uncertainty, and opportunity.

To the extent allowed by time and resources, the ISAB provides specific scientific advice on topics and questions requested from the region or the ISAB itself and approved by the Oversight Panel by majority vote. Fish and wildlife agencies and others may submit questions to the ISAB. The ISAB may also identify questions and propose reviews. The Oversight Panel, in consultation with the ISAB, reviews these questions in a timely manner and decides which are amenable to scientific analysis, are relevant to the Tribes’, Council’s, and NOAA Fisheries’ programs, and fit within the ISAB’s work plan. As stated in the ISAB’s Terms of Reference, many questions pertaining to the recovery of the Columbia River ecosystem contain both scientific and policy aspects. The ISAB addresses the scientific and technical aspects of issues.

In addition, the Council’s 2014 Fish and Wildlife Program directs the Council to work with the ISAB to organize a series of Columbia River science/policy conferences to discuss and explore scientific and technical developments in key policy areas. For example, the ISAB assisted CRITFC and the Council in developing the agendas for CRITFC’s 2016 Future of Our Salmon workshop and conference on floodplain restoration.
Specific Assignments for Fiscal Year 2018

For FY 2018, the ISAB anticipates working on a mix of long, medium, and short-term assignments of varying priority that allow for an efficient use of the ISAB’s expertise and resources. Ongoing and potential topics for assignments are described below. In addition, the ISAB is on-call for assignments from the Council, Tribes, and NOAA Fisheries. These on-call assignments will likely pertain to science issues raised in the Council’s Program, Tribal programs, and NOAA analyses that inform Columbia River fish management including mainstem passage analyses and experiments.

1. Upper Columbia Spring Chinook Review

On April 21, 2017, the ISAB Administrative Oversight Panel asked the ISAB to conduct a review to inform recovery and research efforts related to Upper Columbia River spring Chinook, which were listed as endangered in 1999. The Upper Columbia River spring Chinook evolutionary significant unit (ESU) includes three extant populations for the Wenatchee, Entiat, and Methow subbasins as well as one extinct population for the Okanogan subbasin. In 2007, the Upper Columbia Salmon Recovery Board (UCSRB) working with the National Marine Fisheries Service (NOAA Fisheries) staff developed an Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan. For the past nine years, this plan has guided habitat restoration actions to address key factors limiting the populations’ recovery. NOAA Fisheries recently completed a report, 2016 5-Year Review: Summary and Evaluation of Upper Columbia River Steelhead, Upper Columbia River Spring-run Chinook Salmon. Despite implementation of actions guided by the Recovery Plan and some improvement in abundance and productivity, the 2016 5-Year Review (pp. 15-16) states that Upper Columbia River spring Chinook populations remain at high risk of extinction.

The ISAB has begun this review and is scheduled to complete the review in December 2017. The ISAB is reviewing existing information, plans, and analyses (see review materials). The review questions cover limiting factors, habitat actions, hydrosystem survival, predation, hatchery and harvest mitigation and effects, and associated research, monitoring and evaluation. The review is being coordinated with researchers and restoration practitioners involved with Upper Columbia spring Chinook recovery including NOAA Fisheries; the Upper Columbia Salmon Recovery Board; Washington Department of Fish and Wildlife; the Tribes including the Colville Tribes, the Yakama Nation, and the Upper Columbia United Tribes; and Grant, Chelan, and Douglas County Public Utility Districts. From July 19 to 21, the ISAB met in Wenatchee for presentations and tours of the Wenatchee and Entiat rivers. The ISAB anticipates discussing this review in three additional meetings and possibly conducting site visits of recovery work in the Methow River subbasin in October.

2. Evaluate the 2014 Columbia River Basin Fish and Wildlife Program

A central task described in the ISAB’s Terms of Reference is for the ISAB to “evaluate the Council’s Fish and Wildlife Program on its scientific merits in time to inform amendments to the Fish and Wildlife Program and before the Council requests recommendations from the region.” The Council intends to formally begin its amendment process in 2018. The ISAB review should provide guidance to the Council and region on aspects of the Program that could be improved by incorporating up-
to-date scientific findings and methods. Many ISAB and ISRP reviews informed the development of
the current Program, but some program areas might benefit from further review and up-dating
based on ISAB and ISRP reviews completed after the last Program amendment, for example the
ISAB and ISRP’s Critical Uncertainties Report (ISAB/ISRP 2016-1), the ISAB’s Density Dependence
Report (ISAB 2015-1), the ISAB’s reviews of life cycle models (in progress and ISAB 2014-4), the
ISAB’s Predation Metrics Report (ISAB 2016-1), and the ISRP’s reviews of wildlife, habitat
restoration, and white sturgeon mitigation projects (see ISRP webpage). The ISAB will evaluate the
Program’s scientific principles, biological objectives, and the suite of strategies. Particular areas
of interest are lamprey, sturgeon, predation, habitat restoration approaches and effectiveness
monitoring. The ISAB review product should be concise and written for policy, management, and
scientific audiences. Specifically, the report should inform fish and wildlife managers and the public
as they develop recommendations for amending the 2014 Program. The report should reference
and summarize past ISAB and ISRP findings as appropriate. The Council is discussing a program
amendment schedule at its August meeting. The ISAB’s evaluation should be completed at least a
month before the Council calls for recommendations.

3. 2014 Fish and Wildlife Program: Objectives

The Council’s 2014 Fish and Wildlife Program specifies that “the Council, working with others in the
region, including the state and federal fish and wildlife agencies and tribes, other federal agencies
and the independent science panels, will oversee a regional process to survey, collect, identify, and
refine a realistic set of quantitative objectives for program focal species and their habitat ...” The
ISAB’s role is to “review objectives for scientific quality and usefulness in tracking progress and
adaptively managing Program efforts.” In the spring of 2015, the Council initiated the objectives
setting process focusing on natural-origin adult salmon and steelhead. To develop these objectives,
the Council is coordinating efforts with the NOAA-led Columbia Basin Partnership. This review is
anticipated in 2018 and will be coordinated with the review of the 2014 Program.

The Council may also ask the ISAB to review certain issues that inform other emerging priorities
highlighted in the Program.

4. Research, Monitoring, and Evaluation (RM&E) Reviews

In FY 2018, the ISAB will continue its shared role with the ISRP in reviewing regional plans aimed at
monitoring and evaluating the status of fish and wildlife populations in the Basin and the
effectiveness of projects at benefiting those populations. The ISRP and ISAB\(^1\) closely coordinate
reviews of RM&E plans and products, such as the Council’s Research Plan, draft Council documents
related to Program RM&E activities and guidance, Pacific Northwest Aquatic Monitoring
Partnership (PNAMP) products, Action Agency RM&E plans, and RM&E proposals. In FY 2018, the
ISAB will assist with the further development of the Council’s RM&E program including the

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\(^1\) Joint ISRP/ISAB members will bill their services related to these reviews to their ISAB contracts.
research plan, high-level indicators, science-based assessments, data management, and habitat monitoring and evaluation guidance and implementation strategies.

5. Mainstem Passage Reviews and Regular Review of Fish Passage Center Products

Since its formation, the ISAB has been continuously engaged in reviews of projects, programs, study designs, and analyses related to fish passage at the mainstem Columbia and Snake river dams. The ISAB will continue to be on-call to address mainstem issues including reviews identified in the Council’s Fish and Wildlife Program and in NOAA’s Biological Opinion (BiOp). For example, the 2014 Federal Columbia River Power System BiOp’s section 3.3.3.5 on Reasonable and Prudent Alternative implementation regarding System Survival, page 382, specifies that regional consideration of a spill test include “independent review of (a) data to address potential spurious correlations and (b) alternative experimental design proposals (by the ISAB or other qualified entities).” In 2014, the ISAB completed a review of the spill experiment submitted by the State of Oregon, the Nez Perce Tribe, and others for inclusion in the Council’s Fish and Wildlife Program (ISAB 2014-2). As described in the 2014 Fish and Wildlife Program (pages 65-66), if other regional spill proposals are developed in FY 2018 and if requested by the Administrative Oversight Panel, the ISAB is prepared to review them.

In addition, the May 2016, US District Court ruling by Judge Simon called for the federal action agencies to revise the BiOp and meet National Environmental Protection Act requirements by developing appropriate EIS documents, including consideration of alternatives. These alternatives may include analyses of a variety of changes to hydrosystem operations and configuration that could benefit from ISAB input. Other issues raised in the Court’s decision such as the state of the science on climate change impacts and the benefits of habitat restoration may benefit from ISAB input.

In response to language in the Council’s 2009 Program, the Fish Passage Center (FPC), its Oversight Board, and the ISAB have organized a regular system of independent and timely reviews of the FPC’s analytical products. The Council’s 2014 Program maintains this ISAB review function. FPC products take several forms, and the review guidelines are tailored to reflect the scientific content of these various products. Scientific review by the ISAB is recommended for selected FPC products including the Comparative Survival Study (CSS) annual report as well as analytical products that are identified for review based on the following criteria: (1) new or novel analyses are introduced; (2) new conditions or data bring old analyses into question; and/or (3) consensus cannot be reached in the region on the science involved in the product. As appropriate, these reviews are not limited to only the FPC’s analysis but, as identified, can also include reviews of similar analyses by others. In FY 2018, the ISAB will complete a review of the CSS’s draft 2017 annual report. The review period will begin in early September and end in mid-October 2017.
6. Review of NOAA Fisheries Recovery Planning and Life-Cycle Modeling Products

One of the ISAB’s primary roles is to review draft NOAA Fisheries’ analytical projects that address Columbia River salmon ESA listings and thus affect recovery planning and Council fish and wildlife program planning. For example, the 2010 Supplemental Biological Opinion called for development of a life-cycle model and a subsequent scientific review. In October 2013, the ISAB completed a review of NOAA Fisheries’ draft Life-Cycle Model of Salmonid Populations in the Interior Columbia River Basin (ISAB 2013-5). The ISAB found that progress was evident on model development. However, not all model components were finished and the model was evolving. In May 2017, the ISAB began a review of the next iteration of NOAA’s life cycle models. The ISAB anticipates completing this review in September 2017 and presenting findings to the Council, NOAA, and the Federal Caucus in October and November.

In August 2014, the ISAB completed a review of NOAA Fisheries’ draft Viable Salmonid (VSP) Modeling of Willamette River Spring Chinook Populations (ISAB 2014-4). The ISAB may review future iterations of that modeling effort as more data become available and as the model is further refined to account for stochastic variability and to reflect results of sensitivity analyses.

7. Comparative Examination of Fish and Wildlife Recovery and Mitigation Planning Documents

The ISAB Administrative Oversight Panel have discussed collectively shaping a request to the ISAB to assist in a review pertaining to the 2014 Fish and Wildlife Program, the updated Wy-Kan-Ush-Mi Wa-Kish-Wit tribal salmon restoration plan, and possibly NOAA’s Columbia Basin Long-term Recovery Situation Assessment and other recovery planning documents. Such a review would be collaboratively discussed and developed by the Council, CRITFC in consultation with the upr Riv er tribes, and NOAA’s Northwest Fisheries Science Center and Regional Office. The review would be complementary to and coordinated with any related or planned efforts of NOAA, the Tribes, or the Council. The review might be patterned after the ISAB’s 1999 report “Work-In-Progress Report: Looking for Common Ground: Comparison of Recent Reports Pertaining to Salmon Recovery in the Columbia River Basin.” The ISAB could potentially look at areas of scientific consensus and disagreement, shared uncertainties and strategies, and recovery goals and visions. The potential assignment will be discussed further in FY 2018.

8. State of Science and Other Potential Reviews

The ISAB partners through the Administrative Oversight Panel and the ISAB regularly identify issues that might benefit from ISAB evaluation. The ISAB’s FY 2014 Statement of Work described more than twenty topics that might benefit from scientific review. In 2014, the ISAB selected and developed three topics from this larger set for consideration by the ISAB’s Administrative Oversight Panel: density dependence, novel ecosystems, and life history diversity. The ISAB Administrative
Oversight Panel considered these three topics and approved the density dependence review (ISAB 2015-1). The assignment included questions on novel ecosystems and life history diversity as relevant to density dependence with the intent that the ISAB could further scope and refine potential review proposals for those topics.

Here is an update of the summary request for life history diversity as proposed in 2014 that could be refined and developed into a revised proposal for FY 2018:

- **Measuring, Monitoring, and Managing Life History Diversity for Sustainable Restoration of Anadromous and Resident Fish Species**: This ISAB review would provide specific information on what is known and needs to be known about basin-scale trends in loss of life history diversity of key anadromous and resident fish species in the Basin. It would also provide recommendations for specific quantitative measures and methods to identify, monitor, and manage life history diversity. This review could examine how life history diversity information could best be incorporated into mitigation, conservation, restoration, hydrosystem operations, and reintroduction efforts. One question might be whether recent genomic research probing the genetic basis of life history variation changes how we need to think about diversity in a recovery context. Another question might be how to manage for life history diversity in a novel/modified ecosystem, including anticipated modifications due to climate change.

The Administrative Oversight Panel approves, modifies, or disapproves assignments requested by the region or generated by the ISAB and thus would consider these or other topics for approval if so requested.